Regional Survey. For this project we are primarily concerned with the production and attraction models used in Steps 4 and 5.

Production Models

The Triangle Regional Model uses two types of trip production models: (1) a one-dimensional classification model based on a housing condition rating, which is a surrogate measure of income and associated travel; and (2) a cross-classification model based on household size and income. The trip attraction model used by the TRM is a regression model based on number of employees by five aggregate business types and the number of commercial vehicles in a zone.

Trip generation is produced for five trip purposes by the TRM: Home-Based Work (HBW), Home-Based Shopping (HBSH), Home-Based School (HBS), Home-Based Other (HBO), and Non-Home-Based (NHB). To begin the process, zonal socioeconomic data are entered into the model for each zone. Zonal data include area type (urban or rural), number of households, zone population, average household income (in 1995 dollars), average persons per household (population divided by number of households), the ratio of the average household income to the mean income for the area, number of industrial, retail, highway retail, office, and service employees, number of dwelling units, and number of university beds. Appendix N provides full table of the socioeconomic data categories, a description of each, and the data for Southern Village and Lake Hogan Farms.

The cross-classification models for estimating trip productions for each trip type in the TRM are based on the number of households stratified by household size and income group. Therefore, a disaggregation model was needed to translate the socioeconomic inputs of number of households, persons per household, and income ratio, into the number of households stratified by household size and income group. The theory underlying this model is that for any given zonal average household size, there is a specific "mix" of households for each household size. Likewise, for any given zonal average income range per household, there is a specific "mix" of households within each range. This method for determining the number of households by household size was developed by NCDOT using 1990 census data. The average household size was broken into ranges of 0.1 persons per household from 1-person households to households with 4 persons or greater. The development of the income disaggregation model followed the same approach, but used data from the 1995 Travel Behavior Survey and aggregated into five groups instead of four. Table 3-1 displays the urban trip generation rates for the Triangle Regional Model.